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A Tentative Theory of Aggregation, the Distribution of Income and Firm Scale

by Ryoichi Suzuki

The aggregation problem is an important task confronting modern economics. The static general equilibrium theory cannot explain changes in economic structure. Even by introducing the expectation or time-lag moment, the comparative static theory will not become dynamics. We ask why changes in economic structure occurs. Micro-economic theory regards these changes as random shock or exogenous variables. The limit of micro-economic theory lies in this point. Hitherto many persons have arrived at macro-theory by summating micro-theory. But this method can explain only the stable economic system, and cannot explicitly show the contrast between the endogenous variables in macro and micro-theory. A statistical analysis without economic meaning is the means of prediction, but it cannot take the place of economic theory although stabilized parameter is helpful for prediction, statistics does not have economic meaning. Tinbergen, in his "Econometrics", stressed the negative role of statistics. A remarkable fact is the doubtfulness for the probability theory about econometrics, e.g., in An Econometric model of the United States by Mr. Klein and Goldberger. The taking of different experimental period gives different parameters.

If we neglect the roundabout production theory, we cannot explain economic development. The most important point of difference between Schumpetarian and Keynesian theory is that the former regards the accumulation of capital as a condition of economic development while the latter does not. In Austrian theory, capital plays the role of promoter for economic development by bringing about a change in industrial structure. Active development is necessary for less advanced nations, and in these countries a stable industrial structure is not always the ideal state. Long-run theory should solve the problems of changing economic structure.

In his "Keynesian Revolution", L. R. Klein aggregated micro economic theory to macro-theory assuming the stability of the distribution of income and liquid-assets. I ask the effect of these distribution changes on social consumption and investment. Professor Marschak dealt with the personal and collective budget functions. In his general case he dealt with social consumption combining it with the Lorenz Curve explicitly. We advance to the social consumption functions under changing income-distribution. By algebraic calculation, we deduce the factors to decide social consumption: (1) the income-distribution, (2) the average income, (3) the income of the man who is placed at break-even point, and (4) the rate of change of income-distribution with assets, we get similar results. For observation with Japanese data, we consider individual investment as a function of yield. Then by algebraric calculation, an industrial investment proves the function of the factors: (1) average yield in that industry, (2) the distribution of yield, (3) and its change, the rate of dividend will affect the industrial investment in similar ways.

Social net investment is the aggregation of industrial investment. Using the Hayekian theory, the roundabout investment produces numerous products; investment in the consumer's goods industry is not effective. Considering these reasons, I have deduced the factors that affect the social investment as;—(1) the degree of roundabout production (this is shown with industrial classification), (2) its change, (3) the yield-distribution in each industry (4) its change (5) the average yield in all industries. I will then solve the problem that decides the income and yields distribution.

Way to Establish the Dynamic Theory of Consumers' Behavior

by Tamotsu Sato
Kotaro Tsujimura

In recent years, time shift of consumers' preference was clearly perceived in the fields of consumption and demand function analysis, and several contributions were made to reestablish the theory under

new conditions.

Among these, though roughly, we can classify three types of hypotheses, say, "relative income hypothesis" by Duesenberry and Brady; "habit persistence hypothesis" by A. C. Brown and Farell; "liquid asset hypothesis" by Tobin. And since they are equally powerful, at least to explain relevant data, it is hard to judge which has the highest validity. This kind of difficulty is caused by the methods which these contributors have taken.

Here, to get conclusive results, we adopt Paratoan rather than Martialian scheme and try to trace that time shift directly in terms of consumers' preference field. For this purpose we were obliged to develop new statistical device which may be called "cross-section × time series analysis." Though we have not reached final results yet, some interesting facts were found.

Change in Data and the Measurement of Production Relations

by Keiichiro Obi

The meaning and methods of measuring autonomous production relations are discussed.

Applying the cross-section method of structural estimation to the system of stochastic equationsystem composed of a production function (of the Douglas' type) and an equlibrium condition, we can estimate the "structural" parameters of the production function.

The term of capital included in the production function of such a labor-capital type has been treated as an aggregate quantity of various kinds of real capital goods. However, the introduction and/or the propagation of a new method of production, which are gradually and continuously carried out in the actual production processes, alter the combination of various capital goods employed, and accordingly cause an unexplained time shift of the parameters of the function mentioned above. It is also obvious that the same is caused by changes in the relative prices of the capital goods concerned.

In order to attain more autonomous relation the method of the "engineering production function" is first examined.

After discussing the relationship between the engineering relations and the discrete process analysis (e.g. linear programming), it is recommended to measure the "economic production function" in an industry, process by process where the "material transformation function" and the "energy supply function" are hardly deduced.

It is discussed, relating to the engineering relations, whether the Douglas' type (in terms of physical input) is acceptable or not as the process economic function.

Finally, employing the technological informations, is deduced the production function of hydro-electricity generation which is highly autonomous in the sense that the relation explicitly includes the parameters expressing the natural and the technological conditions.

Estimation of Production Function in Economics

by Iwao Ozaki

Since P. H. Douglas opened the way to estimating a log-linear type of production function, many econometricians have tried to estimate productivities of each industry by the same measure. They all have wanted to obtain the values of the structural parameters so that the estimated values would have as highest degree of autonomy as possible. The method of structural estimation is the one of such character.

The present writer also estimated the production function of paper industry for 1931–1935 by the method of structural estimation. (cf. Mita Gakkaishi Vol. 49, No. 12, 1954)

In the work he mainly put stress upon the development of statistical method, and used both the cross-section data and time-series as useful origins of information.

One of the dificulties of the use of cross-section data is that a firm in one industry is different from each other in quality. To homogenize them he introduced the scale function and measured the scale function parameters. But in the work he could not fully explain the economic meaning of the results.

In this essay he intends to give an economic interpretation to them. (1) Scale functions have dual properties. They are considered as the expression of inequalities of the firms and also as the expression of the wage-rate differentials in scale. (2) From the properties of this structural estimation the theoretical relative price (wage rate/compound interest rate) can be computed in time series. These results amount to testing the producer's behavior model.